Claims as filed

Claims

1. A process for preparing modified metal oxides or metal aquoxides that are dispersible in organic solvents by reaction of

   (A) one or a plurality of metal oxide(s) or metal aquoxide(s) having a crystallite size of 4 to 100 nm, determined by x-ray diffraction on the 021 reflex, and a particle size of less than 1,000 nm

   with

   (B) one or a plurality of organic sulfonic acid(s), where

   (i) in case the reaction takes place in a mainly aqueous medium or in the absence of a diluent/solvent, the organic sulfonic acid is a mono-, di-, or trialkylbenzene sulfonic acid, wherein the alkyl residue(s) are C_1 to C_6 alkyl residues, or

   (ii) in case the reaction takes place in the presence of an organic aprotic solvent or an organic protic solvent, the organic sulfonic acid has at least 14 carbon atoms and at least one aromatic ring,

   wherein the components (A), calculated as metal oxide, and (B) are used at weight ratios from 98:2 to 70:30, preferably from 95:5 to 80:20.

2. The process of claim 1,
characterized in that as metal oxides or metal aquoxides, there are employed such oxides containing aluminum, preferably aluminas, alumina hydrates, especially boehmitic or pseudoboehmitic aluminas, aluminum silicate, or Si/Al mixed oxides.

Claims as filed

3. A process according to any one of the preceding claims,
characterized in that the organic sulfonic acid is toluenesulfonic acid, preferably p-toluenesulfonic acid.

4. A process according to claim 1 or 2,
characterized in that the organic sulfonic acid is an organic compound of the $R-SO_3H$ type, in which R is an alkyl-substituted aromatic hydrocarbon residue with 16 to 24 carbon atoms.

5. A process according to any one of the preceding claims,
characterized in that the metal oxides or metal aquoxides and the organic sulfonic acid are brought into contact at temperatures from 0 to 140°C, preferably from 0 to less than 90°C.

6. A process according to any one of the preceding claims,
characterized in that the metal oxides or metal aquoxides are brought into contact with the organic sulfonic acid for a period from 30 seconds to 7 days, preferably from 30 to 90 minutes, and preferably with stirring.

7. A process according to any one of the preceding claims,
characterized in that the modified metal oxides or metal aquoxides are dried by spray drying, freeze drying, microwave drying, drying in supercritical solvents, filtration, contact drying, or rotary drum drying.

Claims as filed

8. A process according to any one of the preceding claims,
characterized in that the modified metal oxides/metal aquoxides are dispersible in organic solvent suspensions having a solids content of 10 to 35 wt%, preferably 20 to 30 wt%.

9. A process according to any one of the preceding claims,
characterized in that the modified alumina hydrate is processed into molded articles by extrusion, pelleting, or spherical drop forming processes.

10. A process according to any one of the preceding claims,
characterized in that the metal oxides or metal aquoxides are taken up in an organic solvent and this solvent is exchanged for another one.

11. Sulfonic acid-modified metal oxides or metal aquoxides that can be prepared by any one of the preceding processes.

12. A metal oxide or metal aquoxide suspension containing the sulfonic acid-modified metal oxides/metal aquoxides of claim 11 and, as a dispersant,
(I) aprotic polar organic solvents,
(II) protic, polar organic solvents having at least two carbon atoms, or
(III) apolar organic solvents.

Claims as filed

13. The metal oxide or metal aquoxide suspension of claim 12,
characterized in that this suspension contains an additive of at least one organic viscosity-adjusting agent, preferably a polymeric/oligomeric compound, such as cellulose, a cellulose derivative, a polyacrylate, or a polyvinyl alcohol.

14. A process for preparing a metal oxide/metal aquoxide suspension according to claim 12 by dispersing a dispersant-free/solventless powdery sulfonic acid-modified metal oxide or metal aquoxide prepared according to any one of claims 1 through 10 with use of a dispersant according to claim 12.

15. Use of the sulfonic acid-modified metal oxides or metal aquoxides of claim 11,
characterized in that the modified metal oxide/metal aquoxide is incorporated as a filler into solvent-based paints or lacquers or into water-insoluble plastics.

16. Use of the sulfonic acid-modified metal oxides or metal aquoxides of claim 11 for preparing coatings, preferably transparent coatings on films/foils, metals/metal oxides, glass, PVC, and other plastics.

17. Use of the sulfonic acid-modified metal oxides or metal aquoxides of claim 11 for the manufacture of catalyst supports.
